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     (FILE 'HOME' ENTERED AT 22:09:19 ON 27 JUN 2004)

     FILE 'INSPEC' ENTERED AT 22:09:25 ON 27 JUN 2004
L1         8296 SILICIDE
L2          835 WAVEGUIDE(P)(PHOTODETECTOR OR PHOTODIODE)
L3            2 L1 AND L2

     FILE 'CA' ENTERED AT 22:11:50 ON 27 JUN 2004
L4           19 L3

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L3 ANSWER 1 OF 2 INSPEC (C) 2004 IEE on STN
AN 2002:7262991 INSPEC DN A2002-12-0762-037; B2002-06-7230C-035
TI Novel **waveguide** MSM photodetectors on SOI substrates using silicides.
AU Xu, D.-X.; Janz, S.; Cheben, P.; Delage, A. (Inst. for Microstructural Sci., Nat. Res. Council of Canada, Ottawa, Ont., Canada)
SO Proceedings of the SPIE - The International Society for Optical Engineering (2001) vol.4293, p.106-13. 11 refs.
Published by: SPIE-Int. Soc. Opt. Eng
Price: CCCC 0277-786X/01/$15.00
CODEN: PSISDG ISSN: 0277-786X
SICI: 0277-786X(2001)4293L.106:NWPS;1-5
Conference: Silicon-based and Hybrid Optoelectronics III. San Jose, CA, USA, 23-24 Jan 2001
Sponsor(s): SPIE
DT Conference Article; Journal
TC Practical; Experimental
CY United States
LA English
AB A novel Si **waveguide** MSM **photodetector** suitable for high speed/high quantum efficiency applications is proposed and demonstrated. Silicides are formed on a silicon-on-insulator (SOI) substrate through metal/Si reaction under heat treatment, in two areas separated by a narrow gap. The **silicide** sidewalls on the two sides of the narrow gap provide lateral **waveguide** confinement, and also serve as electrodes. The **silicide**/Si interface forms a Schottky junction, making the structure a MSM diode. The **waveguide** structure provides a long optical path length to increase the quantum efficiency at near infrared wavelengths. The distance between electrodes can be changed easily through photolithography, and can be made very small to reduce the transit time between electrodes for high-speed operation. Since the devices are made on SOI substrates, the drift component of the photocurrent can be eliminated, further facilitating high-speed operation. A first set of photodetectors was made using PtSi on commercially available SOI substrates with 0.34 mu m Si layer. Initial experiments have demonstrated a responsivity of near 200mA/W at lambda =980 nm for a detector with 486 mu m long electrodes and 2 mu m gap size. The dark current was on the order of 0.1 nA/ mu m2 at 5V bias.
CC A0762 Detection of radiation (bolometers, photoelectric cells, i.r. and submillimetre waves detection); A7340S Electrical properties of metal-semiconductor-metal structures; B7230C Photodetectors; B2530G Metal-insulator-metal and metal-semiconductor-metal structures; B2520C Elemental semiconductors
CT DARK CONDUCTIVITY; ELEMENTAL SEMICONDUCTORS; HEAT TREATMENT; METAL-SEMICONDUCTOR-METAL STRUCTURES; PHOTODETECTORS; SCHOTTKY BARRIERS; SILICON; SILICON-ON-INSULATOR
ST **waveguide MSM photodetector**; SOI substrate; heat treatment; **silicide sidewalls; lateral waveguide confinement;** Schottky junction; optical path length; quantum efficiency; photolithography; dark current; high speed optics; 980 nm; 0.34 micron; Si-SiO
CHI Si-SiO int, SiO int, Si int, O int, SiO bin, Si bin, O bin, Si el
PHP wavelength 9.8E-07 m; size 3.4E-07 m
ET Si; Pt*Si; Pt sy 2; sy 2; Si sy 2; PtSi; Pt cp; cp; Si cp; V; O*Si; O sy 2; SiO; O cp; Si-SiO; O

L3 ANSWER 2 OF 2 INSPEC (C) 2004 IEE on STN
AN 2001:6876506 INSPEC DN B2001-05-7230C-013
TI Ultrafast Si-based MSM mesa photodetectors with optical **waveguide** connection.
AU Buchal, C.; Loken, M.; Siegert, M.; Roelofs, A.; Kappius, L.; Mantl, S. (Inst. fur Schicht- und Ionentech., Forschungszentrum Julich GmbH, Germany)

- SO Materials Science in Semiconductor Processing (2000) vol.3, no.5-6, p.399-403. 10 refs.
Doc. No.: S1369-8001(00)00063-9
Published by: Elsevier
Price: CCCC 1369-8001/2000/$20.00
CODEN: MSSPFQ ISSN: 1369-8001
SICI: 1369-8001(2000)3:5/6L.399:UBMP;1-Q
Conference: Materials, Technologies and Applications for Optical Interconnect. Part of the 1999 E-MRS Spring Meeting. Strasbourg, France, 3-4 June 1999
DT Conference Article; Journal
TC Experimental
CY United Kingdom
LA English
AB We have fabricated ultrafast Si metal-semiconductor-metal photodetectors and connected them to optical waveguides. The photodetectors are fabricated in a vertical structure consisting of a top metallization (M1), epitaxial silicon, epitaxial metallic CoSi2 (M2) and a Si substrate. In the visible region, photons create electron-hole pairs in the epitaxial Si. At infrared wavelength the energy of the photons is not sufficient to create electron-hole pairs in the Si. In this case, the Schottky contacts of both metallizations provide electron and holes from internal photoemission. The best detectors show a pulse width of 3.2 ps full-width at half-maximum at 1.25 mu m wavelength and room temperature. We present data for the coupling of the detectors to a monomode glass fiber and to polymer-based waveguides on the Si chip.
CC B7230C Photodetectors; B4130 Optical waveguides; B4250 Photoelectric devices
CT ELEMENTAL SEMICONDUCTORS; METAL-SEMICONDUCTOR-METAL STRUCTURES; OPTICAL WAVEGUIDES; PHOTODETECTORS; SILICON
ST **optical waveguide coupling; ultrafast Si metal-semiconductor-metal mesa photodetector**; electron-hole pair; Schottky contact; metallization; internal photoemission; monomode glass fiber; **polymer waveguide; epitaxial metallic silicide**; 1.25 micron
CHI CoSi2 int, Si2 int, Co int, Si int, CoSi2 bin, Si2 bin, Co bin, Si bin, Si el
PHP wavelength 1.25E-06 m
ET Si; Co*Si; Co sy 2; sy 2; Si sy 2; CoSi2; Co cp; cp; Si cp; CoSi; Co

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ICS G02B006-42
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	GB 2392007	A1	20040218	GB 2002-18843	20020814
PRAI	GB 2002-18843		20020814		

AB A light sensor for tapping off a fraction of an optical signal from an integrated optical **waveguide** is described comprising an integrated optical **waveguide** having a light guiding region of a first refractive index higher than the refractive index of adjacent regions; a light absorbing region in optical communication with part of the light guiding region and arranged such that a fraction of light transmitted along the **waveguide** is tapped off into the light absorbing region and at least partially absorbed and a detector for detecting free charge carriers generated by absorption of light in the light absorbing region, the fraction of light tapped-off from the **waveguide** being determined by the dimensions of the light absorbing region. An integrated optical **waveguide** having a light sensor integrally formed is described comprising an integrated optical **waveguide** leading to a **photodiode** portion thereof, the portion being arranged to generate free charge carriers when light of one or more selected wavelengths is incident there and comprising a diode for detecting the presence of the free charge carriers, wherein the **waveguide** is a rib **waveguide** and the portion comprises a region of light absorbing material formed at an upper part of the rib **waveguide**, the dimensions of the portion determining the degree of absorption.
ST **photodetector** integrated **waveguide** optical communication
IT Optical communication
(device; tap-off waveguide light sensor integrated with optical waveguide for)
IT Polysiloxanes, uses
RL: DEV (Device component use); USES (Uses)
(light absorbing region; tap-off waveguide light sensor integrated with optical waveguide)
IT Optical detectors
Optical integrated circuits
Optical waveguides
(tap-off waveguide light sensor integrated with optical waveguide)
IT 7440-21-3, Silicon, uses 7440-56-4, Germanium, uses 11148-21-3 12626-76-5, Iron **silicide**
RL: DEV (Device component use); USES (Uses)
(light absorbing region; tap-off waveguide light sensor integrated with optical waveguide)
RE.CNT 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
(1) Anon; EP 1225459 A2 CA
(2) Anon; WO 2002077682 A2 CA
(3) Anon; US 4360246 A
(4) Anon; US 5032710 A
(5) Anon; US 5054871 A
(6) Anon; US 5285514 A CA
(7) Bell; US 5054871
(8) Canon; US 5032710
(9) Canon; US 5285514 CA
(10) Hughes; US 4360246
(11) Metrophotonics; WO 02077682 A2 CA
(12) Pioneer; EP 1225459 A2 CA

L4 ANSWER 2 OF 19 CA
AN 137:54415 CA

ED Entered STN: 18 Jul 2002
TI High speed and high efficiency Si-based photodetectors using waveguides formed with silicides for near-IR applications
IN Xu, Dan-xia; Janz, Siegfried
PA Can.
SO U.S. Pat. Appl. Publ., 10 pp.
CODEN: USXXCO
DT Patent
LA English
IC ICM H01L031-00
NCL 250214100
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 76
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2002079427	A1	20020627	US 2001-21081	20011219
PRAI	US 2000-257285P	P	20001226		

AB A **photodetector** is described comprising two separated **silicide** regions on a substrate and a **waveguide** of a silicon-based material formed between side-walls of the two separated **silicide** regions. A method of producing a **photodetector** having a **waveguide** of a silicon-based material is also described entailing depositing a metal layer on a silicon-based material layer of a substrate; etching to selectively remove unwanted regions of the metal layer; and heating the metal layer to induce a metal-silicon reaction to produce at least two separated **silicide** regions, at least two separated **silicide** regions forming the **waveguide** of silicon-based material. A method of producing a **photodetector** having a **waveguide** of a silicon-based material is also described entailing forming a ridge in a silicon-based material layer of a substrate and applying a mask on top of the ridge; depositing a metal layer on the silicon-based material layer of the substrate; heating the metal layer to induce a metal-silicon reaction to produce at least two separated **silicide** regions, at least two separated **silicide** regions forming the **waveguide**; and etching to selectively remove unwanted metal from the mask without affecting the at least two separated **silicide** regions. The Si-based photodetectors using waveguides formed with **silicide** regions may have high speed and high efficiency for near-IR applications.
ST IR **photodetector** ridge **waveguide** **silicide**
IT Optical detectors
(IR; high speed and high efficiency silicon-based photodetectors using waveguides formed with silicides for near-IR applications)
IT Semiconductor device fabrication
(high speed and high efficiency silicon-based photodetectors using waveguides formed with silicides for near-IR applications)
IT 7440-02-0, Nickel, uses 7440-06-4, Platinum, uses 7440-21-3, Silicon, uses 7440-33-7, Tungsten, uses 7440-48-4, Cobalt, uses 7631-86-9, Silica, uses 12623-02-8, Germanium 50, silicon 50 (atomic)
RL: DEV (Device component use); USES (Uses)
(high speed and high efficiency Si-based photodetectors using waveguides formed with silicides for near-IR applications)

L4 ANSWER 3 OF 19 CA COPYRIGHT 2004 ACS on STN
AN 136:45221 CA
ED Entered STN: 10 Jan 2002
TI Novel waveguide MSM photodetectors on SOI substrates using silicides
AU Xu, Dan-Xia; Janz, Siegfried; Cheben, Pavel; Delage, Andre
CS Institute for Microstrucutral Sciences, National Research Council Canada, Ottawa, ON, Can.
SO Proceedings of SPIE-The International Society for Optical Engineering (2001), 4293(Silicon-Based and Hybrid Optoelectronics III), 106-113

CODEN: PSISDG; ISSN: 0277-786X
PB SPIE-The International Society for Optical Engineering
DT Journal
LA English
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 76
AB Novel Si **waveguide** MSM **photodetector** suitable for high speed/high quantum efficiency applications is proposed and demonstrated. Silicides are formed on a Si-on-insulator (SOI) substrate through metal/Si reaction under heat treatment, in 2 areas separated by a narrow gap. The **silicide** sidewalls on the 2 sides of the narrow gap provide lateral **waveguide** confinement, and also serve as electrodes. The **silicide**/Si interface forms a Schottky junction, making the structure a MSM diode. The **waveguide** structure provides a long optical path length to increase the quantum efficiency at near IR wavelengths. The distance between electrodes can be changed easily through photolithog., and can be made very small to reduce the transit time between electrodes for high-speed operation. Since the devices are made on SOI substrates, the drift component of the photocurrent can be eliminated, further facilitating high-speed operation. First set of photodetectors was made using PtSi on com. available SOI substrates with 0.34 μm Si layer. Initial expts. demonstrated a responsivity of .apprx.200 mA/W at λ=980 nm for a detector with 486 μm long electrodes and 2 μm gap size. The dark current was .apprx.0.1 nA/μm 2 at 5 V bias.
ST waveguide optical detector platinum silicon Schottky junction MSM SOI; current voltage optical detector waveguide platinum silicon Schottky junction
IT Electric current-potential relationship
Optical waveguides
Schottky semiconductor junctions
(novel waveguide MSM photodetectors on SOI substrates using silicides)
IT Optical detectors
(waveguide; novel waveguide MSM photodetectors on SOI substrates using silicides)
IT 7440-06-4, Platinum, uses 7440-21-3, Silicon, uses 7631-86-9, Silica, uses
RL: CPS (Chemical process); DEV (Device component use); PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent); USES (Uses)
(novel waveguide MSM photodetectors on SOI substrates using silicides)
IT 12137-83-6P, Platinum **silicide** ptsi
RL: PNU (Preparation, unclassified); PREP (Preparation)
(novel waveguide MSM photodetectors on SOI substrates using silicides)
RE.CNT 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE

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L4 ANSWER 4 OF 19 CA COPYRIGHT 2004 ACS on STN
AN 133:315426 CA
ED Entered STN: 16 Nov 2000
TI Semiconductor laser devices and optical transmission apparatus
IN Hosomi, Kazuhiko; Shirai, Masataka; Katsuyama, Toshio

PA Hitachi, Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 7 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM H01S005-32
ICS H01S005-183
CC 73-10 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2000312055	A2	20001107	JP 1999-118934	19990427
PRAI	JP 1999-118934		19990427		

AB The devices comprise: an n-Si substrate; a Si/Si-compound multibilayer 1st DBR mirror; an n-Si cladding layer with an shoulder electrode; a β-$FeSi_2$ active layer; a p-Si cladding layer with a p shoulder electrode; and a Si/Si-compound multibilayer 2nd DBR mirror, where the Si compound is SiO_2, SiGe or Si_3N_4; and the Si substrate is bonded to an integrated circuit comprising a driver and a signal processor, an optical **waveguide** and a **photodiode**.
ST iron **silicide** silica silicon laser
IT Integrated circuits
Laser mirrors
Optical transmission
Optical waveguides
Photodiodes
Semiconductor lasers
(semiconductor laser devices and optical transmission apparatus)
IT 7440-21-3, Silicon, uses 7631-86-9, Silica, uses 11148-21-3
12033-89-5, Silicon nitride (Si_3N_4), uses 12626-76-5, Iron **silicide**
RL: DEV (Device component use); USES (Uses)
(semiconductor laser devices and optical transmission apparatus)

L4 ANSWER 5 OF 19 CA
AN 131:329617 CA
ED Entered STN: 03 Dec 1999
TI Fabrication and characterization of ultrafast photodetectors
AU Loken, Michael
CS Inst. Schicht- Ionentechnik, Forschungszentrum Julich G.m.b.H., Julich, D-52425, Germany
SO Berichte des Forschungszentrums Juelich (1999), Juel-3687, 1-136 pp.
CODEN: FJBEE5; ISSN: 0366-0885
DT Report
LA German
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 76
AB This work reports on the fabrication and characterization of ultrafast vertical metal-Si-metal (MSM) Schottky-barrier photodiodes for the detection of visible and IR light. The devices are manufactured on an epitaxial buried $CoSi_2$ ground plate on Si consisting of a high quality single crystalline Si layer sandwiched between the buried $CoSi_2$ layer and a top semitransparent metal layer. For wavelengths <1.1 μm, electron-hole pairs are generated in the Si. They are separated by an internal elec. field and accelerated towards the metal electrodes. For shorter wavelengths, Si becomes transparent and carriers are emitted from the internal semiconductor-metal interface. A photocurrent is produced. This so-called internal photoeffect is governed by different carrier dynamics: hot electrons or holes are injected from the metal layers into the Si. Their large excess energy leads to extremely fast elec. pulses. A new theor. model for the hot carrier dynamics inside the detector is proposed and examined by detailed simulations. The resulting temporal response of

the detectors was measured with a new setup, using a mode-locked Ti:Al2O3 laser and an optical parametric oscillator, which generates ultrafast optical pulses (170 fs) at IR wavelengths. At 820 nm the MSM photodiodes show an impulse response as short as 3.5 ps FWHM for Si(100) and 6.7 ps FWHM for Si(111). For the 1st time, the temporal response of MSM photodiodes was investigated at 1250 and 1560 nm wavelengths with femtosecond resolution MSM photodiodes with different top metalization (Cr, Ti, and Pt) were analyzed. In addition, the dependence of the temporal response from the applied voltage, the temperature, the dispersion on the microstrip line, and the area of the detector was studied. The exptl. results were interpreted with respect to the model proposed. The Ti/Si/CoSi2 photodetectors showed an elec. pulse response of 3.2 ps FWHM at 4 V bias. This is to our knowledge a record value. Furthermore, it is demonstrated that under certain conditions an even faster response can be achieved. At fiat band bias (no elec. field inside the detector) a very sharp pulse of 1.2 ps was observed Other important characteristics of the diodes (e.g. Schottky-barrier heights, dark current, quantum efficiency, responsivity, crystal quality of the layers) are presented. In addition the coupling of a monomode glass fitter and a polymer-based **waveguide** to the MSM **photodiode** on 1 Si chip was realized and investigated. The manufacturing processes are described and the exptl. coupling
efficiencies are given.

ST silicon metal cobalt **silicide** photodetector fabrication characterization

IT Optical detectors
(IR; fabrication and characterization of ultrafast metal-Si-CoSi2 Schottky-barrier photodetectors for visible and IR radiation)

IT Sputtering
Sputtering
(etching, ion-beam, reactive; fabrication of ultrafast metal-Si-CoSi2 Schottky-barrier photodetectors for visible and IR radiation by)

IT Optical detectors
Schottky diodes
(fabrication and characterization of ultrafast metal-Si-CoSi2 Schottky-barrier photodetectors for visible and IR radiation)

IT Ion implantation
Photolithography
(fabrication of ultrafast metal-Si-CoSi2 Schottky-barrier photodetectors for visible and IR radiation by)

IT Electric current-potential relationship
Photocurrent
(of ultrafast metal-Si-CoSi2 Schottky-barrier photodetectors for visible and IR radiation)

IT Etching
Etching
(sputter, ion-beam, reactive; fabrication of ultrafast metal-Si-CoSi2 Schottky-barrier photodetectors for visible and IR radiation by)

IT 7440-06-4, Platinum, properties 7440-21-3, Silicon, properties
7440-32-6, Titanium, properties 7440-47-3, Chromium, properties
12017-12-8, Cobalt disilicide
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process); USES (Uses)
(fabrication and characterization of ultrafast metal-Si-CoSi2 Schottky-barrier photodetectors for visible and IR radiation)

RE.CNT 71 THERE ARE 71 CITED REFERENCES AVAILABLE FOR THIS RECORD

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L4 ANSWER 6 OF 19 CA COPYRIGHT 2004 ACS on STN
AN 131:163085 CA
ED Entered STN: 11 Sep 1999
TI Si-based optoelectronic devices and their attractive applications
AU Wang, Qiming; Yang, QinQing; Zhu, Yuqing; Si, Junjie; Liu, Yuliang; Lei, Hongbing; Cheng, Buwen; Yu, Jinzhong
CS State Key Laboratory on Integrated Optoelectronics, Semiconductor, Beijing, 100083, Peop. Rep. China
SO Czechoslovak Journal of Physics (1999), 49(5), 837-848
CODEN: CZYPAO; ISSN: 0011-4626
PB Institute of Physics, Academy of Sciences of the Czech Republic
DT Journal
LA English
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 76
AB Semiconductor photonics and optoelectronics which have a great significance in the development of advanced high technol. of information systems are discussed. The emphasis will be put on the recent research carried out in our laboratory in enhanced luminescence from low dimensional materials such as SiGe/Si and Er-doped Si-rich SiO2/Si and Er-doped SixNy/Si. A ring shape **waveguide** structure, used to promote the effective absorption coefficient in PIN **photodetector** for 1.3 μm wavelength and a resonant cavity enhanced structure, used to improve the quantum efficiency and response in heterostructure photo-transistor (HPT), are also proposed.
ST silicon optoelectronic semiconductor device; germanium silicon phototransistor; erbium doped silica luminescence; quantum well silicon nitride erbium dopant
IT Optical detectors
(IR; silicon/germanium **silicide** IR detector with ring-shaped waveguide)
IT Electroluminescent devices
(germanium **silicide** quantum dots on silicon)
IT Sol-gel processing
(light emission from erbium-doped silicon-rich silica)
IT Quantum dot devices
(light emission from germanium **silicide** quantum dots on silicon)
IT Luminescence
(of germanium **silicide** quantum dots and quantum wells on silicon)
IT Heterojunction semiconductor devices
(optoelectronic semiconductor devices using silicon/silica heterostructure)
IT Bragg reflectors
Phototransistors
Quantum well devices
(resonant cavity phototransistor using silicon/silica Bragg reflector and silicon/germanium **silicide** multiple quantum well)
IT Optoelectronic semiconductor devices
(silicon-based)
IT Optical waveguides
(silicon/germanium **silicide** IR detector with ring-shaped waveguide)
IT 12033-89-5, Silicon nitride, properties
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process)
(light emission from erbium-doped silicon nitride quantum well on silicon)
IT 7440-52-0, Erbium, uses

RL: MOA (Modifier or additive use); USES (Uses)
(light emission from erbium-doped silicon-rich silica)
IT 10168-80-6, Erbium nitrate
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(light emission from erbium-doped silicon-rich silica)
IT 7631-86-9D, Silica, silicon-rich, properties
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process)
(light emission from erbium-doped silicon-rich silica)
IT 76998-02-2, Germanium 40, silicon 60 (atomic)
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process); USES (Uses)
(light emission from self-organized germanium **silicide** quantum dots on silicon)
IT 7440-21-3, Silicon, properties
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process); USES (Uses)
(optoelectronic semiconductor devices using)
IT 7631-86-9, Silica, properties
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process); USES (Uses)
(optoelectronic semiconductor devices using silicon/silica heterostructure)
IT 11148-21-3
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process); USES (Uses)
(resonant cavity phototransistor using silicon/silica Bragg reflector and silicon/germanium **silicide** multiple quantum well)
IT 37380-03-3, Germanium 20, silicon 80 (atomic)
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process); USES (Uses)
(self-organized germanium **silicide** quantum dots by holog. laser interference method)
IT 12771-64-1, Germanium 35, silicon 65 (atomic)
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process); USES (Uses)
(silicon/germanium **silicide** IR detector with ring-shaped waveguide)
RE.CNT 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
(1) Datao, X; J Spectrosc Spectr Anal 1998, V18, P177
(2) Hongbing, L; Chin Phys Lett 1998, V15, P72
(3) Tang, Y; Proc 22nd Int Conf on Semiconductors 1994, P125
(4) Yuliang, L; Chin J Semincond 1996, V17, P667
(5) Yuqing, Z; Proc 47th ECTC 1997, P54

L4 ANSWER 7 OF 19 CA COPYRIGHT 2004 ACS on STN
AN 130:145864 CA
ED Entered STN: 06 Mar 1999
TI Design and fabrication of GeSi/Si strained layer superlattice waveguide PIN photodetectors at λ=1.3μm
AU Wan, Jianjun; Li, Guozheng; Li, Na; Xu, Xuelin; Liu, Enke
CS Department Microelectronic Engineering, Xi'an Jiatong University, Xi'an, 710049, Peop. Rep. China
SO Bandaoti Xuebao (1998), 19(8), 597-602
CODEN: PTTPDZ; ISSN: 0253-4177
PB Kexue Chubanshe
DT Journal
LA Chinese
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
AB We have designed and fabricated GexSi1-x/Si strained layer superlattice (SLS) photodetectors integrated with Si epitaxial waveguides. It is exhibited that at 5V reverse bias the maximum photocurrent is 2.6μA, the

min. dark current and the min. dark c.d. are 400nA and 10-3A/cm2, resp. It is also measured that the overall quantum efficiency is 14.2%.

ST germanium **silicide** superlattice **waveguide** PIN **photodetector**

IT Optical detectors
(design and fabrication of GeSi/Si strained layer superlattice **waveguide** PIN **photodetector** at λ=1.3μm)

IT Optical waveguides
(**photodetector**; design and fabrication of GeSi/Si strained layer superlattice **waveguide** PIN **photodetector** at λ=1.3μm)

IT 7440-21-3, Silicon, uses
RL: DEV (Device component use); USES (Uses)
(design and fabrication of GeSi/Si strained layer superlattice **waveguide** PIN **photodetector** at λ=1.3μm)

IT 12623-02-8
RL: DEV (Device component use); PRP (Properties); USES (Uses)
(design and fabrication of GeSi/Si strained layer superlattice **waveguide** PIN **photodetector** at λ=1.3μm)

L4 ANSWER 8 OF 19 CA

AN 129:295895 CA

ED Entered STN: 21 Nov 1998

TI Fabrication of integrated GeSi/Si superlattice PIN **photodetector** with Si **waveguide**

AU Li, Na; Xu, Xuelin; Li, Guozheng; Liu, Enke; Jiang, Zumin; Zhang, Xiangjiu; Wang, Xun

CS Surface Physics Key National Laboratory, Fudan University, Shanghai, 200433, Peop. Rep. China

SO Guangxue Xuebao (1998), 18(4), 471-473
CODEN: GUXUDC; ISSN: 0253-2239

PB Kexue Chubanshe

DT Journal

LA Chinese

CC 73-12 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 74, 76

AB A GeSi/Si superlattice structure was grown on an n+/n- Si wafer by MBE method. A GeSi/Si superlattice PIN **photodetector** and a Si **waveguide** were fabricated by reactive ion etching. The integration of the Si **waveguide** and the GeSi/Si superlattices PIN **photodetector** was carried out by a suitable process. The min. dark current of the **photodetector** was 0.8 μA and the maximum photocurrent was 2.7 μA at a reverse bias of 5 V. The maximum overall quantum efficiency of the **photodetector** was 14.2%. The working wavelength was 1.3 μm.

ST integrated germanium **silicide** silicon superlattice photodetector; PIN superlattice photodetector germanium **silicide** silicon

IT Superlattices
(germanium **silicide**/silicon integrated with silicon waveguide as PIN photoelec. device)

IT Photoelectric devices
(p-i-n; germanium **silicide**/silicon superlattice integrated with silicon waveguide as)

IT Waveguides
(silicon; integrated with germanium **silicide**/silicon superlattices as PIN photoelec. devices)

IT 7440-21-3, Silicon, uses
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(integrated PIN photoelec. devices with superlattices of germanium **silicide** and)

IT 145998-02-3, Germanium **silicide** (GeSi)

RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(integrated PIN photoelec. devices with superlattices of silicon and)

L4 ANSWER 9 OF 19 CA COPYRIGHT 2004 ACS on STN
AN 128:250395 CA
ED Entered STN: 12 May 1998
TI Analysis of electronic transport of GexSi1-x/Si superlattice PIN **waveguide-photodetector**
AU Li, Na; Liu, Enke; Li, Guozheng; Xu, Xuelin
CS Xi'an Jiaotong University, Xi'an, 710049, Peop. Rep. China
SO Xi'an Jiaotong Daxue Xuebao (1997), 31(9), 58-61, 66
CODEN: HCTPDW; ISSN: 0253-987X
PB Xi'an Jiaotong Daxue Chubanshe
DT Journal
LA Chinese
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
AB The electronic transport of GexSi1-x/Si superlattice PIN **waveguide -photodetector** was analyzed. The description of the phys. meanings for quantum efficiency, photocurrent, and bandwidth was presented. The theor. anal. was in good agreement with exptl. results.
ST germanium **silicide photodetector** superlattice **waveguide**
IT Optical detectors
(PIN; anal. of electronic transport of GexSi1-x/Si superlattice PIN **waveguide-photodetector**)
IT Optical waveguides
Photocurrent
Superlattices
(anal. of electronic transport of GexSi1-x/Si superlattice PIN **waveguide-photodetector**)
IT 7440-21-3, Silicon, properties 98915-83-4, Germanium 45, silicon 55 (atomic)
RL: DEV (Device component use); PRP (Properties); USES (Uses)
(anal. of electronic transport of GexSi1-x/Si superlattice PIN **waveguide-photodetector**)

L4 ANSWER 10 OF 19 CA COPYRIGHT 2004 ACS on STN
AN 128:81891 CA
ED Entered STN: 10 Feb 1998
TI Optical field analysis of integration of silicon waveguides and Ge0.4Si0.6/Si superlattice
AU Xu, Xuelin; Li, Na; Liu, Enke
CS Dept. Electronic Eng., Xian Jiaotong Univ., 710049, Peop. Rep. China
SO Guti Dianzixue Yanjiu Yu Jinzhan (1997), 17(4), 384-387
CODEN: GDYJE2; ISSN: 1000-3819
PB Guti Dianzixue Yanjiu Yu Jinzhan Bianjibu
DT Journal
LA Chinese
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 76
AB The optical field in superlattice **photodetector** Ge0.4Si0.6/Si is analyzed and was calculated by the Beam Propagation Method (BPM). The possibility of integration of a Si **waveguide** and this kind of detector is discussed. On condition that single-mode is propagated in waveguides and detectors, the propagation distance, when it reaches stability, can be calculated The **photodetector** length vs. **waveguide** parameter is also proposed.
ST optical field analysis **waveguide** integrated **photodetector**; germanium **silicide** silicon superlattice **photodetector**
IT Optical detectors

Optical waveguides
Superlattices
(optical field anal. of integration of silicon waveguides and Ge0.4Si0.6/Si superlattice)

IT 7440-21-3, Silicon, uses 76998-02-2
RL: DEV (Device component use); USES (Uses)
(optical field anal. of integration of silicon waveguides and Ge0.4Si0.6/Si superlattice)

L4 ANSWER 11 OF 19 CA COPYRIGHT 2004 ACS on STN
AN 127:270198 CA
ED Entered STN: 04 Nov 1997
TI Monolithic optoelectronic integration of GeSi modulator and photodetector
AU Li, Na; Gao, Yong; Li, Guozheng; Liu, Enke
CS Xi'an Jiaotong Univ., Xi'an, 710049, Peop. Rep. China
SO Bandaoti Guangdian (1997), 18(3), 175-178
CODEN: BAGUE5; ISSN: 1001-5868
PB Bandaoti Guangdian Bianjibu
DT Journal
LA Chinese
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
AB The possibility of integrating between **waveguide**, modulator and **photodetector** from GeSi materials is discussed theor. and practically. It's feasible both theor. and technol.
ST monolithic optoelectronic integration germanium **silicide** modulator; germanium silicon **photodetector waveguide** integration
IT Optical detectors
Optical integrated circuits
Optical modulators
Optical waveguides
(monolithic optoelectronic integration of GeSi modulator and photodetector)
IT 11110-50-2, Germanium 5, silicon 95(atomic) 12623-02-8, Germanium 50, silicon 50 (atomic) 12675-06-8, Germanium 60, silicon 40 (atomic)
RL: DEV (Device component use); USES (Uses)
(monolithic optoelectronic integration of GeSi modulator and photodetector)

L4 ANSWER 12 OF 19 CA COPYRIGHT 2004 ACS on STN
AN 127:168783 CA
ED Entered STN: 16 Sep 1997
TI Calculation of GexSi1-x/Si MOW **photodetector waveguide** structure
AU Zhu, Yuqing; Yang, Qinquing; Wang, Qiming
CS National Integrated Optoelectronics Laboratory, Institute of Semiconductors, Chinese Academy of Sciences, Peop. Rep. China
SO Guangzi Xuebao (1997), 26(5), 408-412
CODEN: GUXUED; ISSN: 1004-4213
PB Kexue

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☐	L8	l1 and l4	0
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☐	L3	silicide	58049
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END OF SEARCH HISTORY